# *MOOCS* ADOPTION AMONG OMANI FACULTY MEMBERS: INVESTIGATING THE EFFECTS OF GENDER AND FACULTY DISCIPLINES ON READINESS

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## ABSTRACT

*This study aims to explore the factors influencing the readiness to adopt massive open online courses (MOOCs) for teaching among faculty members in Omani higher education by considering the influence of gender, disciplines, and personal factors such as attitude (ATT), self-efficacy (SE), technical competencies (TC), and access to tools (ACT). A quantitative survey research design was utilized to investigate the difference and relationship between gender and faculty disciplines (science vs. non-science) towards MOOC readiness (MR) and personal factors. The findings reveal no significant differences between gender in both disciplines towards perceived MOOC readiness. As for individual characteristics, while non-science disciplines indicate no differences between gender, the science discipline indicates significant differences in ATT. In terms of association, male faculty members reflected high associations between and within all personal factors and MR; however, female members did not show such association by only associating SE and TC with MR. Nevertheless, more similarities were observed between male and female faculty members in the non-science discipline, indicating a focus on technical factors. These findings contribute to understanding the difference between gender and faculty discipline when explored based on personal factors that influence the future use of MOOCS for teaching in Omani higher education.*

**Keywords:** *faculty members, faculty discipline, gender, MOOC readiness, Omani higher education, personal factor*

## INTRODUCTION

Massive open online courses, or MOOCs, are online courses designed to accommodate a large number of students—regardless of their background, age, and location—to attend and complete courses based on their own convenience (Kumar & Al-Samarraie, 2018; Mutawa, 2016). MOOCs are also known as a scalable disruptive learning platform that provides affordable alternatives for lifelong learning (Al-Harthi & Ani, 2023) through digital learning experiences (Yuan & Powell, 2013). Furthermore, MOOCs provide students with infinite learning opportunities, as they are not confined to taking courses only offered by their higher education institution (HEI) (Matriano, 2023) but also MOOCs provided by other industries or educational institutions. Hence, MOOCs have become necessary for tertiary education worldwide (Kumar & Al-Samarraie, 2019; Bervell et al., 2022a) as they enrich learning experiences beyond the norm by globalizing education. The most popular MOOC platforms are Coursera, edX, and Udacity (Antonova & Bontchev, 2020), which offer a platform for educationists and industry partners to

host their courses globally. Likewise, HEIs also offer tailor-made courses and provide accreditation or participatory acknowledgements, which has allowed MOOCs to progress from the basic structure of single courses to providing whole degree programs at various educational levels through micro-credentialing and badges (Kumar et al., 2022a).

Then again, while MOOCs have been extensively utilized and adopted worldwide, they are still new in the Middle East, and the need for such a platform was only popularized due to the pandemic (Almisad et al., 2021; Al-Harthi & Ani, 2023). Initially, in 2013, US-based MOOCs providers offered Arabic-translated courses and agreed to host courses developed by Arab faculty members and professionals due to the language limitation, as Arab learners may not be confident taking MOOCs in English (Gameel & Wilkins, 2019). Nevertheless, according to Sallam (2017), in the Arab region, the adoption often varies based on each country's digital infrastructure and internet penetration. Accordingly, the most famous MOOC platforms in the Arab region are the Rwaq and Edraak platforms, and most users are from Saudi Arabia and Egypt (Aboulmagd, 2018). Edraak was founded in 2014 as a result of a collaboration between edX and Jordan's Queen Rania Foundation, followed by other MOOC platforms—such as MenaVersity in Lebanon, SkillAcademy, and EgyMOOCs in Egypt (Abdel-Maksoud, 2019), Nadrus.com in the United Arab Emirates (UAE), and the Iraqi-bMOOC platform (Ali & Shiratuddin, 2018)—that offer Arabic language MOOCs (Mutawa, 2016). Interestingly, according to Ruipérez-Valiente et al. (2020), Edraak has higher engagement metrics than edX as it attracts younger audiences, females, and learners who have lower levels of education and schooling.

However, the usage of MOOCs does not appear to be widespread at Omani institutions, and it is still novel compared to other Arab nations (Al Hosni & AlAli, 2022). According to Al-Khanjari & Al-Kindi (2018), MOOCs could promote blended learning opportunities and expand the lifelong learning impact by providing a new path for partnership between Omani HEIs. While open e-learning platforms such as Edlal was launched in 2017, other Arabic language platforms, such as Sultan Qaboos University's SQU MOOC platform, were only established in 2019, just before the pandemic. Nevertheless, the Covid-19 pandemic significantly changed teaching and learning practices by enhancing e-learning and introducing digital learning tools, such as Microsoft Teams and Moodle, to the forefront in Oman (Tawfik & Elmaasrawy, 2022). According to Al-Harthi and Ani (2023), several Omani HEIs are increasingly employing blended courses and providing more digital content to students while creating online learning communities that facilitate interaction. For example, Sultan Qaboos University is experimenting with online courses as part of their official degrees. Hence, technical competencies and attitudes of educators and learners have positively shifted to embrace online learning interaction, post-pandemic (Kumar et al., 2022b). Consequentially, MOOCs have been described as a tool that could digitally transform Oman's educational system and simultaneously cater to Oman Vision 2040 (Matriano, 2023). Nevertheless, while some Omani HEIs have recently begun to offer selected online courses, these courses still necessitate face-to-face interaction (Al-Harthi & Ani, 2023). Hence, we speculate that Omani HEIs tend to perceive MOOCs from a blended perspective as they still value social interaction in teaching and learning, thus raising questions about the level of awareness in realizing Oman's digital transformation policy.

For this reason, digital transformation in the context of Omani HEIs could only be established if the stakeholders recognize the value and importance of such transformation (Matriano, 2023). Since MOOCs are part of such transformation, we agree with the suggestion of Subramaniam et al. (2019) to explore the readiness of faculty members in higher education institutions to adopt MOOCs. In hindsight, MOOC readiness has been primarily investigated from students' perspectives (Al-Harthi & Ani, 2023; Gameel & Wilkins, 2019) by often neglecting educators' views as MOOC content creators. In addition, according to Ahmed et al. (2021), empirical investigation on MOOC readiness among faculty members is vital before institutions plan to adopt MOOCs. This was strategized to reduce the risk and obstacles of MOOC implementation and increase its success (Kurniasari et al., 2018). Therefore, determining MOOC readiness is a trait that educational institutions are exploring to identify the basis for effective MOOC adoption (Mohapatra & Mohanty, 2017) by focusing on a

combination of factors that can contribute towards successful implementation (Azevedo & Marques, 2017). Therefore, while MOOC readiness could be defined as the minimum facilities that institutions and individuals must possess to use MOOCs (Fadzil et al., 2016), it also could be described as an individual's preparedness and ability to engage in and mutually perceive to benefit from MOOCs. Readiness in such context includes ICT infrastructure, institutional assistance, and policies that support the willingness of lecturers to adopt MOOCs (Azevedo & Marques, 2017). In this study, we defined MOOC readiness from the faculty members' perspectives, where we associated readiness as preparedness that lecturers individually perceived they have in designing and developing their MOOCs to facilitate online teaching.

Therefore, we focus this study on faculty members' personal or internal factors. Personal factors refer to individual characteristics or traits that influence a person's behavior. According to Annamalai et al. (2021), personal factors are vital in determining the intention to use online platforms, especially in distance education. Hence, this includes access to technology (Mutambik, 2018), self-efficacy (Bakogianni et al., 2020), and attitude (Bervell et al., 2022a). Furthermore, Hung (2016) and Gasaymeh (2009) also emphasize a strong relationship between access to tools with attitudes. Likewise, AlQaidoom and Shah (2019) claim that it is also critical to consider educators' digital knowledge to successfully and effectively adopt MOOCs as an e-learning platform in higher education institutions in the Arab region. According to Ventayen (2018), faculty members' teaching experience with technology could also be a personal factor in determining readiness to adopt MOOCs. Zou et al. (2021) explained that if faculty members have sufficient experience in online teaching, such as integrating blended learning approaches, it will increase their readiness to adopt MOOCs in the future. Nevertheless, while using internal factors to determine the readiness of faculty members to adopt the MOOC is warranted (Hilali & Moubtassime, 2021), Bakogianni et al. (2020) claim that external factors, such as subjective norms and university factors, may also influence such adoption. However, in the context of HEI, Samaila et al. (2022) uphold that external factors associated with teaching and learning online, such as technological and organizational infrastructure, may not influence intention due to digital experience and positive socioeconomic standing. Therefore, this study focuses on personal factors, such as attitude, self-efficacy, technical competencies, and access to tools, that may affect readiness to adopt MOOCs for teaching and learning.

Additionally, as we focus on personal drivers, demographic characteristics should also be considered when exploring the intention to adopt new technology. According to Al Hinai et al. (2020), in Arab societies such as Oman, gender consideration is vital due to the prevailing gender stereotypes and social norms. Likewise, this was also supported by González-Gómez et al. (2012), stating that in conservative countries such as Oman, gender is an essential factor affecting readiness to adopt new technology and in the workforce. According to the Global Gender Gap Report (World Economic Forum, 2022), Oman is one of the few countries in the Middle East and North Africa (MENA) that has increased technical roles and senior roles for women. Nevertheless, the gender gap issue has rarely been explored in Oman, even though there has long been a recognition within the educational systems that females outperform males in mathematics and science studies (Al-Balushi et al., 2022). According to Al-Emran and Shaalan (2017), significant differences among lecturers' attitudes towards using technology for teaching and learning were observed in favor of female teachers; however, this was not apparent when considering age and educational backgrounds. Equally, Aldahdouh et al. (2020) and Ergen et al. (2019) found that while male users are more willing to adopt new technologies, Firat and Bozkurt (2020) and Shea (2019) confirmed that females have higher tendencies. Besides, we also speculate that educational background may affect MOOC adaption as it could be hypothesized that people from technical fields are more exposed to technology in their working environment. Additionally, according to Ibrohim et al. (2021), faculty members in scientific disciplines are relatively reluctant to adopt e-learning technologies compared to non-scientific disciplines. At the same time, Phal et al. (2022) confirmed no differences in readiness levels between faculty members teaching science and non-science fields in adopting technology for teaching and learning.

Consequently, this study explores the factors influencing the readiness to adopt MOOCs for teaching among faculty members in Omani higher education by considering the influence of gender, faculty disciplines, and personal factors such as attitude (ATT), self-efficacy (SE), technical competencies (TC), and access to tools (ACT). In the Arab region, a third of the articles published on MOOCs are from Saudi Arabia and Egypt, with a few studies focusing on educators and policymakers (Almisad et al., 2021). Abdel-Maksoud (2019) and Sallam (2017) claim that the MOOCs movement in Arab universities is still limited and warrants future exploration. Likewise, Ruipérez-Valiente et al. (2020) claim that the effectiveness and use of Arab MOOC providers are understudied, and the characteristics of such platforms are not well understood, even based on its advantageous position that broadens online learning as a culturally inclusive learning experience. Accordingly, for Arab states, Gameel and Wilkins (2019) express that MOOC readiness studies need to consider each country's timeline of internet adoption and gender as these factors influence technical competencies. Conversely, Al Hosni and AlAli (2022) also emphasize the need for a more in-depth investigation into MOOC awareness among educators in Oman. While MOOCs are novel in Omani HEIs, this study focuses on the faculty's perspective by exploring the following research questions:

i. Is there a significant difference between faculty members' gender in their readiness to design and develop MOOCs for teaching in learning for science and non-science fields in Oman HEIs?
ii. Is there a significant difference between faculty members' gender on their attitude, self-efficacy, technical competencies, and access to tools for designing and developing MOOCs for science and non-science fields in Oman HEIs?
iii. How do gender differences in each discipline associate with attitude, self-efficacy, technical competencies, and access to tools towards MOOC readiness in Oman HEIs?

## MATERIALS AND METHODS

The quantitative survey research design was utilized to collect data pertaining to the faculty members' demographic profile (gender, age, educational background, and discipline), personal factors (ATT, SE, TC, and ACT), and MR. Hence, to answer the research questions, first the independent variables (IV)—namely gender (male vs. female) and faculty discipline (science vs non-science)—were examined to measure the dependent variables (DV), which were MOOC readiness and personal factors (ATT, SE, TC, ACT) based on a continuous scale. Next, a correlation analysis was performed to determine the relationship between the DVs and the IVs. According to Bornstein (2011), correlational study helps establish the relationship between variables and the extent to which they vary.

## RESPONDENTS

This study was executed at Sultan Qaboos University. The institute consists of nine colleges and other specialized centers. These colleges have been classified into science and non-science colleges based on the OHI's guidelines. Five of them are science colleges: College of Nursing, College of Agricultural and Marine Sciences, College of Medicine and Health Sciences, College of Engineering and College of Science, while the rest are social sciences colleges (College of Law, College of Economics and Political Sciences, College of Education, and College of Arts and Social Sciences and Center of Preparatory Studies). The academic staff population was 876, with 29.9% female (N=262) and 70.1%(n=614) male faculty members. GPower 3.1 (Faul et al., 2007) was used to determine a minimum sample size of 34 responses per group based on a statistical power of at least .95 with $\alpha$ of .05 and a medium effect size of $d$ = 0.5. Based on the N=130 respondents, the percentage of female respondents was 49.2% (N=64), and 50.8% (N=66) were male (Table 2). The age of respondents was 26–35 years at 13% (N=17), 36–45 years at 28.6% (N=37), 46–55 years at 30.7% (N=40), and older than 55 years at 27.7% (N=36). The level of education was bachelor's degrees at 4.7% (N=6), master's degrees at 39.1% (N=51), and doctorates at 56.3% (N=73). The percentage of faculty members from science and non-science colleges was 45.4% (N=59) from science colleges and 54.6% (N= 71) from non-science colleges.

*Table 1.*
*Descriptive Information About the Sample*

| Colleges / Center | N (%) | Male | Female |
|---|---|---|---|
| Science Colleges | | 32 (54.2%) | 27 (45.8%) |
| Agricultural & Marine Sciences | 4 | | |
| Engineering | 9 | | |
| Medicine & Health Sciences | 15 | | |
| Nursing | 11 | | |
| Science | 20 | | |
| Total | 59 ( 45.4%) | | |
| Non-Science (Humanities) Colleges | | 34 (47.9%) | 37 (52.1%) |
| Arts & Social Sciences | 11 | | |
| Economics & Political Science | 9 | | |
| Education | 22 | | |
| Law | 2 | | |
| Preparatory studies | 27 | | |
| Total | 71 (54.6 %) | | |
| Grand Total | 130 | 66 (50.8%) | 64 (49.2%) |

*Variables and Instruments*

The instrument for this study is an online questionnaire created through Google Forms. The items for MOOC readiness (MR) were adapted from Mutambik (2018) and Subramaniam et al. (2019) to measure lecturers' preparedness and suitability to engage in designing and developing MOOCs for teaching and learning. ATT items were adapted from Bakogianni et al. (2020), measuring lecturers' positive or negative perceptions towards MOOC adoption in OHI, which Phan and Dang (2017) claim influence readiness. Next, self-efficacy was adapted from Mutambik (2018) and Ventayen (2018), measuring lecturers' perceptions of their abilities, knowledge, and skills to adopt MOOCs. SE relates to an individual's persistence when faced with complex tasks relating to personal abilities, knowledge, and skills (Mannila et al., 2018) when developing and designing their MOOCs. Likewise, ACT items were also adapted from the same sources and measured the perception of the availability of ICT facilities in designing and developing MOOCs (Salehi & Largani, 2020). Lastly, TC measures lecturers' perceived competence concerning technological skills to design and develop MOOCs, such as internet skills, computer skills, and basic ICT skills (Alshaher, 2013) and was adapted from Oketch (2013) and Ventayen (2018). All items for personal factors were adapted to include statements referring to academicians' perceptions with designing and developing MOOCs as the items referred to measuring e-learning readiness. Table 2 reflects the sample and number of items for each factor. These items were measured using a five-point Likert scale where respondents must rate their perceptions from "strongly disagree = 1" to "strongly agree = 5." The instrument's validity was assessed by two subject matter experts in the area of education technology, and the reliability scores for all factors were found to be reliable based on Cronbach's Alpha coefficient being above 0.7 (Pallant, 2016) (see Table 2).

*Table 2.*
*Study Reliability*

| Factors | Items | Sample item | Author | Cronbach's Alpha |
|---|---|---|---|---|
| Attitude (ATT) | 5 | I believe by developing MOOCs, I would be able to acquire the necessary competencies for my professional development. | Bakogianni et al. (2020) | .825 |
| Self-Efficacy (SE) | 4 | I believe I am skilled enough to develop MOOCs for teaching, even if I have not used such a system before. | Mutambik (2018); Ventayen (2018) | .933 |
| Technical Competencies (TC) | 4 | I believe I have enough computer skills to develop MOOCs. | Oketch (2013); Ventayen (2018) | .872 |
| Access to Technology (ACT) | 4 | I have the necessary basic tools at home to develop MOOCs (e.g., mic, lighting, video recorder). | Mutambik (2018) | .871 |
| MOOC Readiness (MR) | 4 | I look forward to teaching with MOOCs. | Mutambik (2018); Subramaniam, et al. (2019) | .819 |

*Data Collection and Analysis*

The data for this study was collected using an e-survey method, where the questionnaire was distributed using Google Forms. The total number of items in the questionnaire used to measure the DVs was 25, and four additional items were added to gather demographic information. The response was voluntary and the questionnaire was distributed to respondents through each college's administrative representative. Furthermore, two reminders were sent out at two-week intervals to achieve a higher response rate. The instrument was available for participation for two months. The questionnaire was designed to ensure compulsory responses to all items before submission to avoid missing item responses. Next, the data was retrieved from Google Forms as a CSV file and cleaned using Microsoft Excel. The data was then transferred to IBM SPSS Statistics software v27 to determine the normalcy of the data distribution. Based on the central limit theorem, a normal distribution was assumed as the sample size per group was above 30 (Ghasemi & Zahediasl, 2012). Conversely, the difference between IVs and DVs was next measured using a t-test to answer RQ1 and RQ2, followed by RQ3 using a Pearson correlation analysis.

## RESULTS

*RQ1: Difference between gender in their readiness to design and develop MOOCs for teaching in learning for science and non-science disciplines.*

An independent t-test was used to analyse this question. Based on the findings, the science discipline showed there was no significant difference in gender ($t(57) = 1.233$, $p = .223$, $d = .700$), despite female faculty members (M = 4.063, SD = .769) attaining higher scores in MOOC readiness than male faculty members (M = 3.867, SD = .635). Likewise, this was also observed for the non-science disciplines for female (M = 4.095, SD = .613) and male faculty members (M = 3.912, SD = .668) at $t(69) = 1.202$, $p = .223$, $d = .640$).

*RQ2: Difference between gender in ATT, SE, TC, and ACT for designing and developing MOOCs for science and non-science disciplines.*

It was observed that there was no significant difference between gender in regard to the non-science disciplines for ATT, SE, TC, and ACT (see Table 3). However, while SE, TC, and ACT reflect no significant difference in the science disciplines, ATT shows a significant difference between genders at $t(57) = 2.597$, $p = .012$, $d = .860$ reflecting a high effect size. Conversely, it reflects that the female faculty member (M=3.896, SD =0.823) had a much more positive attitude towards developing MOOCs than the male faculty member (M=3.313, SD =.890)

*RQ3: Gender differences in the relationship between ATT, SE, TC, and ACT in designing and developing MOOCs for science and non-science fields.*

The relationship between the factors and MR was investigated using Pearson correlation and reported in Table 4. For both disciplines, male faculty members reflected a significant correlation for all factors with MOOC readiness. In the science disciplines, ATT ($r = .729$, $p<.01$) correlates the highest with MOOC readiness, followed by SE ($r = .575$, $p<.01$) and ACT ($r = .575$, $p<.01$). Collectively, the finding also indicates that besides the association with MR, personal factors—namely ATT, SE, TC, and ACT—were also significantly associated with each other for the males in science faculty members. As for the non-science discipline, SE and TC, equally at $r = .771$, $p <0.01$, were the most substantial influence and had the same strength in association with MR. The findings also indicated significant relationships between SE, TC, and ACT but not for ATT. Hence, non-science male faculty members highly associate their ability to design MOOCs based on their perceived technical competencies and access to such tools.

Similarly, this association between personal factors were also observed for the female faculty members of the non-science disciplines but with different strengths (see Table 4). Nevertheless, when exploring MOOC readiness, specifically for female members in the non-science disciplines, MR was significantly influenced by ATT ($r = .387$, $p <0.05$) and TC ($r = .326$, $p <0.05$), where SE and ACT were not associated with MR. Conversely, for the science discipline, MOOC readiness was found to be primarily attributed to SE ($r = .454$, $p < 0.5$) and TC ($r = .536$, $p < .01$), but no association were observed between the personal factors, which was opposed to their male counterpart.

*Table 3.*
*Descriptive or Inferential Statistics on MOOC Readiness Factors*

| Discipline Male N | | Descriptive Statistics | | | | | t | T-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Female | Male | | Female | | | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | | Cohen's d | |
| | | N | Mean | SD | Mean | SD | | | | | Lower | Upper | | |
| Science | ATT | 32 | 27 | 3.313 | 0.890 | 3.896 | 0.823 | 2.597 | 57.000 | 0.012 | -0.584 | -1.034 | -0.134 | 0.860 |
| | SE | | | 3.180 | 0.984 | 3.463 | 0.871 | 1.160 | 57.000 | 0.251 | -0.283 | -0.772 | 0.206 | 0.934 |
| | TC | | | 3.938 | 0.871 | 4.213 | 0.469 | 1.472 | 57.000 | 0.146 | -0.275 | -0.650 | 0.099 | 0.716 |
| | ACT | | | 3.852 | 1.220 | 3.917 | 0.835 | 0.235 | 57.000 | 0.815 | -0.065 | -0.621 | 0.490 | 1.062 |
| Non-Science | ATT | 34 | 37 | 3.847 | 0.745 | 4.027 | 0.521 | 1.187 | 69.000 | 0.239 | -0.180 | -0.482 | 0.122 | 0.638 |
| | SE | | | 3.831 | 0.852 | 3.446 | 1.012 | 1.725 | 69.000 | 0.089 | 0.385 | -0.060 | 0.830 | 0.939 |
| | TC | | | 4.096 | 0.723 | 3.818 | 0.948 | 1.381 | 69.000 | 0.172 | 0.278 | -0.124 | 0.680 | 0.848 |
| | ACT | | | 4.228 | 0.601 | 4.203 | 0.620 | 0.174 | 69.000 | 0.863 | 0.025 | -0.264 | 0.315 | 0.611 |

*Note: (ATT) Attitude, (SE) Self-Efficacy, (TC) Technical Competencies, (ACT) Access to Tools

*Table 4.*
*Correlation Results Between the MOOC Factors*

| Correlations | | | | | | | |
|---|---|---|---|---|---|---|---|
| Discipline | | | ATT | SE | TC | ACT | MR |
| Science | Male | ATT | 1 | | | | |
| | | SE | .781** | 1 | | | |
| | | TC | .613** | .573** | 1 | | |
| | | ACT | .744** | .624** | .893** | 1 | |
| | | MR | .729** | .575** | .433* | .575** | 1 |
| | Female | ATT | 1 | | | | |
| | | SE | 0.381 | 1 | | | |
| | | TC | -0.065 | 0.167 | 1 | | |
| | | ACT | 0.065 | -0.226 | 0.182 | 1 | |
| | | MR | 0.262 | .454* | .536** | 0.226 | 1 |
| Non-Science | Male | ATT | 1 | | | | |
| | | SE | 0.166 | 1 | | | |
| | | TC | 0.233 | .676** | 1 | | |
| | | ACT | -0.096 | .433* | .367* | 1 | |
| | | MR | .535** | .771** | .771** | .523** | 1 |
| | Female | ATT | 1 | | | | |
| | | SE | -0.037 | 1 | | | |
| | | TC | 0.041 | .719** | 1 | | |
| | | ACT | -0.305 | .510** | .330* | 1 | |
| | | MR | .387* | 0.185 | .326* | -0.193 | 1 |

**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant at the 0.05 level (2-tailed)
*Note: (ATT) Attitude, (SE) Self-Efficacy, (TC) Technical Competencies, (ACT) Access to Tools

## DISCUSSIONS

This study aimed to determine the readiness of faculty members in higher educational institutions to adopt MOOCs in Oman based on gender and discipline. The results indicated no significant difference in readiness or willingness to adopt MOOCs based on gender in both disciplines. However, in the science discipline, female members were found to be more accepting of designing and developing MOOCs than their male counterparts, where likewise contradicting findings were observed for the non-science discipline. While Corti et al. (2021) postulated that equality between genders in their readiness to adopt the MOOC was apparent only in scientific colleges, Zou et al. (2021) also claimed the same for non-scientific colleges. Overall, the findings of this study aligned with Aljaraideh (2019), indicating no difference between male and female faculty adopting MOOCs for teaching and learning in the Arabic context. Next, when personal factors were evaluated, the non-science discipline reflected no differences between gender ATT, SE, TC, and ACT, while the science discipline reflected significant differences in ATT with a high effect size.

Conversely, female faculty members reflected a much more positive attitude toward developing MOOCs than males. While Aldosemani et al. (2019) claimed that female faculty members in this context reflect less attitude towards adopting

MOOCs than male faculty members, our findings in both disciplines demonstrated otherwise. According to Alsuhaymi and Alghamdi (2021), while there could be a negative perception of gender segregation in Middle Eastern educational institutions, such policies have assisted women in excelling academically by allowing them greater freedom while protecting their privacy. Hence, we theorize that due to such opportunity, women tend to be more appreciative of such endeavors as they perceive it as a prospect enabling them to progress in their careers. Furthermore, according to Ruipérez-Valiente et al. (2020), more female learners are using MOOCs than their male counterparts, indicating the potential of MOOCs as a workforce development tool. This was also speculated by Bervell et al. (2022b), claiming that faculty members may improve their attitude towards utilizing online platforms if they feel it will assist them in meeting their job needs in remote education.

Next, what particularly stands out in the findings is how personal factors correlate with the readiness to design and develop MOOCs. In both disciplines, male members reflected a significant correlation with all factors, yet females in the science discipline were only associated with SE and TC, while non-science disciplines were with ATT and TC. In the science disciplines, females are associated the most with SE, as reported by Ibrohim et al. (2021), and men with ATT. Nevertheless, the association was vice versa for the non-science discipline, where the focus was also given to TC. Interestingly, in both accounts female members did not associate ACT with MOOC readiness, which opposed findings for male members. According to Hung (2016), gender could significantly mediate the relationship between TC and ACT and the readiness to adopt new technology. Henceforth, this indicates that TC is essential for female faculty members in adopting MOOCs in both contexts. According to Cai et al. (2017), females may be more open to adopting new technology, and we speculate that the openness towards technology could also be associated with their discipline. Conversely, for the females in the science discipline, the emphasis is on TC, which we believe is logical due to their vast exposure to technology in the science field. Hence, the findings are inconsistent with those reported by Mutambik (2018) in Saudi HEIs for scientific and non-scientific disciplines that confirmed the role of gender in determining the readiness of faculty members to adopt MOOCs. Although the compatibility between the Omani and Saudi reality is from the perspective of culture and religion, it seems that the female faculty members in Oman were able to overcome these challenges.

## CONCLUSIONS

Therefore, we conclude that there is no significant difference between gender in Omani higher education in their readiness to adopt MOOC in both disciplines. This is also apparent in personal factors affecting MOOC readiness, such as SE, TC, and ACT. However, in the science discipline, the ATT of female faculty members was significantly higher than male members. Next, when associations were evaluated, it was observed that male faculty members in both disciplines reflected a significant positive correlation between personal factors with readiness to design and develop MOOCs; however, female members in the science discipline reflected an association with TC and SE, while non-science associated with ATT and TC. Female members in both groups also did not reflect on ACT as an essential characteristic in this endeavor. Hence, the findings reflect a strong correlation between personal factors for male faculty members in Omani HEIs, but for female members, external factors such as colleague support and administrative support may have a stronger influence on the adoption of MOOCs. Hence, future studies can explore these factors by considering facilitating conditions and aspects to improve technical competencies. According to Al-Harthi and Ani (2023), a lack of a national policy strategy to widen the scope of Omani HEIs to include MOOCs is still lacking. Hence, we suggest future studies also consider how administration policies could influence the adaptation of MOOCs. Likewise, more consideration should also be given to exploring other demographic variables, such as age and experience, cultural impacts, and the influence of digital literacy on the adaptation of MOOCs for teaching and learning.

## CONFLICT OF INTERESTS

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# References


Abdel-Maksoud, N. F. (2019). Factors affecting MOOCs' adoption in the Arab world: Exploring learners' perceptions on MOOCs' drivers and barriers. Higher Education Studies, 12(11), 164–177. http://doi.org/10.5539/ies.v12n11p164

Aboulmagd, N. (2018). Learner engagement in a MOOC in the Arab world: A case study analysis using the community of inquiry framework [Masters thesis, the American University in Cairo]. AUC Knowledge Fountain. https://fount.aucegypt.edu/etds/68.

Ahmed, M. M., Sultana, N., Astri Dwi Jayanti, S., Mardoni, Y., & Helmiatin, H. (2021). Attitude towards entrepreneurship development courses of MOOCs. Asian Association of Open Universities Journal, 16(1), 129–141. http://doi.org/10.1007/s41959-022-00080-0

Aldosemani, T., Shepherd, C. E., & Bolliger, D. U. (2019). Perceptions of instructors teaching in Saudi blended learning environments. TechTrends: For Leaders in Education & Training, 63(3), 341–352. https://doi.org/10.1007/s11528-018-0342-1

Aldahdouh, T. Z., Nokelainen, P., & Korhonen, V. (2020). Technology and social media usage in higher education: The influence of individual innovativeness. SAGE Open, 10(1). https://doi.org/10.1177/2158244019899441

Aljaraideh, Y. (2019). Massive open online learning (MOOC) benefits and challenges: A case study in Jordanian context. International Journal of Instruction,12(4), 65–78. https://doi.org/10.29333/iji.2019.1245a

Ali, Q. A., & Shiratuddin, N. (2018). Effective design of blended MOOC in Iraq institutions. Journal of Education and Social Sciences, 9(2), 113–128. https://www.jesoc.com/wp-content/uploads/2018/04/KC9.2_48.pdf

Almisad, B., Alsaffar, R., & Buhamad, A. (2021). Massive open online courses (MOOCs) in research in the Arab world: A systematic review of the published literature. The Journal of Mu'tah Lil-Buḥūth wad-Dirāsāt: Humanities and Social Sciences Series, 36(1), 137–174.

Alshaher, A. A. F. (2013). The McKinsey 7S model framework for e-learning system readiness assessment. International Journal of Advances in Engineering & Technology, 6(5), 1948–1966. https://www.researchgate.net/publication/321918535_the_mckinsey_7s_model_framework_for_e-learning_system_readiness_assessment

Alsuhaymi, D. S., & Alghamdi, A. M. (2021). An investigation of the factors that predict university instructors' intentions to adopt social media into their teaching. Journal of Educators Online, 18(1). https://doi.org/10.9743/jeo.2021.18.1.1.12

Amantha Kumar, J., & Al-Samarraie, H. (2019). An investigation of novice pre-university students' views towards MOOCs: The case of Malaysia. The Reference Librarian, 60(2), 134–147. https://doi.org/10.1080/02763877.2019.1572572

Annamalai, N., Kumar, J. A., Ramayah, T., & Osman, S. (2021). Investigating the use of learning management system (LMS) for distance education in Malaysia: A mixed-method approach. Contemporary Educational Technology, 13(3), ep313. https://doi.org/10.30935/cedtech/10987

Antonova, A., & Bontchev, B. (2020). Investigating MOOC platforms as a prospective tool for mobile learning. In 16th International Conference Mobile Learning, Sofia, Bulgaria, April 2–4, 2020 (pp. 2–4). https://doi.org/10.33965/ml2020_202004L004

AlQaidoom, H., & Shah, A. (2019). Digital literacy and the attitude of educators towards MOOC platform in GCC countries. In 2019 IEEE International Conference on Innovative Research and Development (ICIRD), University of Indonesia, Jakarta, June 28–30, 2019 (pp. 1–6). IEEE. https://doi.org/10.1109/icird47319.2019.90746

Azevedo, J., & Marques, M. (2017). MOOC success factors: Proposal of an analysis framework. Journal of Information Technology Education Innovations in Practice, 16, 233–251. https://doi.org/10.28945/3861

Al-Balushi, S. M., Mansour, N., Almehrizi, R. S., Ambusaidi, A. K., & Al-Harthy, I. S. (2022). The association between the gender gap in science achievement and students' perceptions of their own attitudes and capabilities. Eurasia Journal of Mathematics, Science, and Technology Education, 18(11), em2184. https://doi.org/10.29333/ejmste/12559

Al-Emran, M., & Shaalan, K. (2017). Academics' awareness towards mobile learning in Oman. International Journal of Computing and Digital Systems, 6(01), 45–50. http://dx.doi.org/10.12785/IJCDS/060105

Al-Harthi, A. S. A., & Ani, W. T. A. (2023). Learner readiness for MOOCs in Omani higher education institutions: Disparities between projections and reality. Education and Information Technologies, 28(1), 303–319. https://doi.org/10.1007/s10639-022-11183-5

Al-Khanjari, Z., & Al-Kindi, I. (2018). Integrating MOOC with open source Moodle: The new direction of learning at Sultan Qaboos University. In 2018 International Conference on Innovations in Information Technology (IIT). https://doi.org/10.1109/innovations.2018.8605

Al-Kindi, I., Al-Khanjari, Z., & Kraiem, N. (2017). Sultan Qaboos University between e-learning and massive open online course: Future vision. In Free and Open Source Software Conference (FOSSC-17) at Sultan Qaboos University (SQU) (pp. 1813–419X).

Al Hinai, M. R., Bhuiyan, A. B., & Husin, N. A. (2020). The moderating effects of gender, career, and moral mindset on the relationship between the graduate attributes and readiness for employability among engineering colleges graduates in Oman. International Journal of Accounting & Finance Review, 5(3), 16–30. https://doi.org/10.46281/ijafr.v5i3.807

Al Hosni, A. K., & AlAli, S. F. (2022). MOOCs in Omani higher education institutions: Use and popularity. Education, Language, and Sociology Research, 3(1), 1–24. http://dx.doi.org/10.22158/elsr.v3n1p1

Bakogianni, E., Tsitouridou, M., & Kyridis, A. (2020). MOOCs in teachers' professional development: Examining teacher readiness. Academia, (18), 9–40.

Bervell, B., Kumar, J. A., Arkorful, V., Agyapong, E. M., & Osman, S. (2022a). Remodelling the role of facilitating conditions for Google Classroom acceptance: A revision of UTAUT2. Australasian Journal of Educational Technology, 38(1), 115–135. https://doi.org/10.14742/ajet.7178

Bervell, B., Umar, I. N., Masood, M., Kumar, J. A., Armah, J. K., & Somuah, B. A. (2022b). Promoting voluntary use behavior of learning management systems among tutors for blended learning in distance higher education. Contemporary Educational Technology, 14(4), ep379. https://doi.org/10.30935/cedtech/12193

Bornstein, R. F. (2011). Toward a process-focused model of test score validity: Improving psychological assessment in science and practice. Psychological Assessment, 23(2), 532. https://doi.org/10.1037/a0022402

Cai, Z., Fan, X., & Du, J. (2017). Gender and attitudes toward technology use: A meta-analysis. Computers & Education, 105, 1–13. https://doi.org/10.1016/j.compedu.2016.11.003

Corti, P., Baudo, V., Turró, C., Santos, A. M. & Nilsson, C. (2021): Fostering women to STEM MOOCs, In C. Meinel, T. Staubitz, S. Schweiger, C. Friedl, J. Kiers, M. Ebner, A. Lorenz, G. Ubachs, C. Mongenet, J. A. Ruipérez-Valiente, & M. C. Mendez (Eds.), EMOOCs 2021, Universitätsverlag Potsdam (pp. 129–141). https://doi.org/10.25932/publishup-51714

Ergen, B., Yanpar Yelken, T., & Kanadli, S. (2019). A meta-analysis of research on technological pedagogical content knowledge by gender. Contemporary Educational Technology, 10(4), 358–380. https://doi.org/10.30935/cet.634182

Fadzil, M., Latif, L. A., Kassim, Z. A., & Subramaniam, T. T. (2016). MOOCs readiness among Malaysian adult learners. In E-ASEM Life-Long Learning Forum, Copenhagen, Denmark, October 3–5, 2016 (pp. 1–13).

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. Behavior Research Methods, 39, 175–191. https://doi.org/10.3758/BF03193146

Firat, M., & Bozkurt, A. (2020). Variables affecting online learning readiness in an open and distance learning university. Educational Media International, 57(2), 112–127. https://doi.org/10.1080/09523987.2020.1786772

Gameel, B. G., & Wilkins, K. G. (2019). When it comes to MOOCs, where you are from makes a difference. Computers & Education, 136, 49–60. https://doi.org/10.1016/j.compedu.2019.02.014

Gasaymeh, A. M. M. (2009). A study of faculty attitudes toward internet-based distance education: A survey of two Jordanian public universities [Doctoral dissertation, Ohio University].

Ghasemi, A., & Zahediasl, S. (2012). Normality tests for statistical analysis: A guide for non-statisticians. International Journal of Endocrinology and Metabolism, 10(2), 486–489. https://doi.org/10.5812/ijem.3505

González-Gómez, F., Guardiola, J., Rodríguez, Ó. M., & Alonso, M. Á. M. (2012). Gender differences in e-learning satisfaction. Computers & Education, 58(1), 283–290. https://doi.org/10.1016/j.compedu.2011.08.017

Hilali, E. E., & Moubtassime, M. (2021). Moroccan teachers of English acceptance and readiness to use MOOCS for continuing professional development. Universal Journal of Educational Research, 9(5), 891–900. https://doi.org/10.13189/ujer.2021.090501

Hung, M. L. (2016). Teacher readiness for online learning: Scale development and teacher perceptions. Computers & Education, 94, 120–133. https://doi.org/10.1016/j.compedu.2015.11.012

Ibrohim, Sudrajat, A. K., & Saefi, M. (2021). Assessing Indonesian teacher's perspective on the implementation of distance learning due to Covid-19 based on online survey. Journal of Turkish Science Education, 18 (Covid-19 Special Issue), 46–59. https://doi.org/10.36681/tused.2021.71

Kumar, J. A., & Al-Samarraie, H. (2018). MOOCs in the Malaysian higher education institutions: The instructors' perspectives. The Reference Librarian, 59(3), 163–177. https://doi.org/10.1080/02763877.2018.1458688

Kumar, J. A., Richard, R. J., Osman, S., & Lowrence, K. (2022a). Micro-credentials in leveraging emergency remote teaching: The relationship between novice users' insights and identity in Malaysia. International Journal of Educational Technology in Higher Education, 19(1), 18. https://doi.org/10.1186/s41239-022-00323-z

Kumar, J. A., Osman, S., Sanmugam, M., & Rasappan, R. (2022b). Mobile learning acceptance post pandemic: A behavioural shift among engineering undergraduates. Sustainability, 14(6),

3197.

Kurniasari, F., Jusuf, E., & Gunardi, A. (2018). The readiness of Indonesian toward MOOC system. International Journal of Engineering & Technology, 7(3), 1631–1636. https://doi.org/10.14419/ijet.v7i3.15431

Mannila, L., Nordén, L. Å., & Pears, A. (2018). Digital competence, teacher self-efficacy, and training needs. In Proceedings of the 2018 ACM Conference on International Computing Education Research, Espoo, Finland, August 13–15, 2018 (pp. 78–85). https://doi.org/10.1145/3230977.3230993

Matriano, M. T. (2023). Balancing of skills in the digital transformation of education and employability. In SHS Web of Conferences (Vol. 156, p. 08004). EDP Sciences. https://doi.org/10.1051/shsconf/202315608004

Mohapatra, S., & Mohanty, R. (2017). Adopting MOOCs for afforable quality education. Education and Information Technologies, 22(5), 2027–2053. https://doi.org/10.1007/s10639-016-9526-5

Mutambik, I. (2018). Exploring the readiness of students and English teachers to use e-learning for English as a foreign language in Saudi Arabia (Doctoral dissertation, University of Edinburgh).

Mutawa, A. M. (2016). It is time to MOOC and SPOC in the Gulf region. Education and Information Technologies, 22(4), 1651–1671. https://doi.org/10.1007/s10639-016-9502-0

Oketch, H. A. (2013). E-learning readiness assessment model in Kenyas' higher education institutions: A case study of University of Nairobi (Doctoral dissertation, University of Nairobi).

Ouma, G. O., Awuor, F. M., & Kyambo, B. (2013). E-Learning readiness in public secondary schools in Kenya. European Journal of Open, Distance, and E-Learning, 16(2), 97–110.

Pallant, J. (2016). SPSS Survival Manual: A Step by Step Guide to Data Analysis Using SPSS Program, 6th edition. London, UK: McGraw-Hill Education.

Phan, T. T. N., & Dang, L. T. T. (2017). Teacher readiness for online teaching: A critical review. International Journal Open Distance E-Learn, 3(1), 1–16.

Phal, C., Chankoulika, B., & Ryuto, M. (2022). Cambodian secondary school teachers' readiness for online teaching during the Covid-19 pandemic (No. 134). CDRI Working Paper Series.

Ruipérez-Valiente, J. A., Halawa, S., Slama, R., & Reich, J. (2020). Using multi-platform learning analytics to compare regional and global MOOC learning in the Arab world. Computers & Education, 146, 103776. https://doi.org/10.1016/j.compedu.2019.103776

Salehi, S. J., & Largani, S. M. H. (2020). E-learning challenges in Iran's higher education system and its implications in the realm of good governance. Smart Cities and Regional Development (SCRD) Journal, 4(1), 9–21.

Sallam, M. H. (2017). A review of MOOCs in the Arab world. Creative Education, 8(04), 564. https://doi.org/10.4236/ce.2017.84044

Samaila, K., Khambari, M. N. M., Kumar, J. A., & Masood, M. (2022). Factors influencing postgraduate students' intention to use learning management system. Tuning Journal for Higher Education, 9(2), 151–176. https://doi.org/10.18543/tjhe.2177

Shea, P. (2019). Bridges and barriers to teaching online college courses: A study of experienced online faculty in thirty-six colleges. Online Learning Journal, 11 (2), 73–128. https://doi.org/10.24059/olj.v11i2.1728

Subramaniam, T. T., Suhaimi, N. A. D., Latif, L. A., Abu Kassim, Z., & Fadzil, M. (2019). MOOCs readiness: the scenario in Malaysia. International Review of Research in Open and Distributed Learning, 20(3), 80–101. https://doi.org/10.19173/irrodl.v20i3.3913

Tawfik, O. I., & Elmaasrawy, H. E. (2023). Assessing the factors that affected the development of cloud-based accounting education and students' academic performance in Oman. Arab Gulf Journal of Scientific Research, 41(2), 141–157. https://doi.org/10.1108/AGJSR-07-2022-0102

Ventayen, R. J. M. (2018). Teachers' readiness in online teaching environment: A case of department of education teachers. PSU Journal of Education, Management and Social Sciences, 2(1), 94–106. https://ssrn.com/abstract=3331115

World Economic Forum. (2022). Global Gender Gap Report 2022. https://www3.weforum.org/docs/WEF_GGGR_2022.pdf

Yuan, L., & Powell, S. J. (2013). MOOCs and open education: Implications for higher education. University of Bolton, CETIS. http://publications.cetis.ac.uk/2013/667

Zou, C., Li, P., & Jin, L. (2021). Online college English education in Wuhan against the Covid-19 pandemic: Student and teacher readiness, challenges, and implications. PloS One, 16(10), e0258137. https://doi.org/10.1371/journal.pone.0258137